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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAY 29 1996

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MEMORANDUM

SUBJECT: Review of MRID #43983502: "Vinclozolin 50 DF: Exposure and Margins of Exposure for Snap Bean Irrigation Workers, Mixer/Loaders, and Applicators"

FROM: John Leahy, Environmental Protection Specialist
Occupational and Residential Exposure Branch (7509C) *John Leahy Jr.*

THRU: Al Nielsen, Section Head
Reregistration Section II
Occupational and Residential Exposure Branch (7509C) *Al Nielsen*

Larry Dorsey, Chief *Larry Dorsey*
Occupational and Residential Exposure Branch (7509C)

TO: Kathryn Boyle
Risk Characterization and Analysis Branch (7509C)

INTRODUCTION

To support a Section 18 registration of vinclozolin 50 DF on snap beans, BASF prepared and submitted an evaluation of worker exposure. The submission's introduction says that the BASF evaluation generally tracks OREB's exposure assessment for the RED, but identified two issues of concern: (1) exposure to reentry workers, and (2) exposure to mixer/loaders and applicators supporting groundboom applications.

CONCLUSIONS

OREB agrees that the MOEs for mixer/loaders and applicators supporting groundboom applications of vinclozolin to snap beans will exceed 100 if the application rate is 0.75 lbs a.i. or less per acre. Label restrictions limiting the number of acres which may be treated in a day to fewer than the 80 acres used by OREB as an estimate of acres treated per day would further increase the MOEs.

For reentry irrigation workers, OREB disagrees with the conclusions reached by BASF in their evaluation. The BASF conclusions are based on assumptions which are not supported by appropriate data or EPA policy.

DETAILED CONSIDERATIONS--Reentry Irrigation Workers

Several assumptions are made in the BASF submission with which OREB disagrees. These are summarized below.

- **Surrogate Postapplication Data:** No snap bean-specific data are currently available. OREB disagrees with BASF's assumptions that strawberry foliar dislodgeable residue data are a "reasonable surrogate for FDR on beans" and that "transfer coefficients from bean foliage to harvesters (would) be similar to that found in the BASF strawberry harvester dermal exposure study." Because bean foliage is taller, leafier, and denser than strawberry foliage, OREB would expect transfer coefficients to be higher for reentry workers in beans than for strawberries. In OREB's draft RED chapter for vinclozolin, the strawberry data was selected only as the best available surrogate for snap beans; the other postapplication data available were for peaches and turf.
- **Dislodgeable Residues:** BASF assumes that foliar residues will become less dislodgeable by workers over time, and therefore uses lower transfer coefficients for DATs 1 and 2 than for DAT 0 (based on the strawberry data). In the absence of chemical-specific snap bean data, OREB recommends using consistent transfer coefficients. Some postapplication studies have shown that pesticide residues become more dislodgeable over time, resulting in higher transfer coefficients as time progresses. Further, due to the leafier foliage, OREB believes that the transfer coefficient of 1,000 cm²/hr for snap bean harvesters used in the draft RED assessment may underestimate snap bean irrigation worker exposure. Actual transfer coefficients will depend on the type of irrigation equipment used, crop maturity, and worker activities during snap bean irrigation. OREB currently has no postapplication data for snap beans, but believes that the BASF submission's assumptions regarding FDRs and transfer coefficients are likely to considerably underestimate worker exposure.
- **Application Rate:** BASF assumes an application rate of 0.5 lbs a.i./acre on snap beans, half the rate used in the strawberry study from which the FDRs were derived. BASF ~~and~~ assumes a linear relationship between the application rate and the FDRs, and thus derives an FDR value which is half the 1 lb/acre value. If the application rate for snap beans is less than 1 lb a.i./acre, OREB agrees that the FDRs will likely be lower also. Based on Section 18 submissions over the past several years, OREB believes that the maximum application rate considered should be 0.75 lbs a.i./acre. OREB notes, however, that such a linear relationship between application rate and FDRs has not been demonstrated and should not be assumed.
- **Annualizing Exposures:** BASF annualized worker exposure in their analysis. For intermediate-term toxicological endpoints (7 to 90-days exposure) such as the endpoint of

concern for vinclozolin, EPA believes it is not appropriate to annualize exposure values.

RECOMMENDATIONS

OREB believes that MOEs for mixers/loaders and applicators supporting groundboom applications of vinclozolin to snap beans will have MOEs over 100 if the label-specified application rate is 0.75 lbs a.i. or less per acre.

Until chemical- and crop-specific postapplication data are available for vinclozolin use on snap beans, OREB continues to recommend an REI of 10 days, with an exception for early-entry irrigation workers which is consistent with the recommendation made by the Pilot Interdisciplinary Risk Assessment Team (PIRAT) in their 4/23 review for the Michigan Section 18 request (attached). In this review, PIRAT recommends allowing workers, under the Worker Protection Standard (WPS) early entry exception for irrigation, to reenter treated snap bean fields to perform any irrigation activities provided there is no entry for the first four hours following the end of the application, entry is limited to 4 hours per worker per 24-hour period until the end of the REI, and the workers wear coveralls over long-sleeved shirt and long pants, waterproof gloves, chemical-resistant footwear plus socks, protective eyewear, and chemical-resistant headgear for overhead exposure. Under the WPS exception, the irrigation tasks could not have been foreseen; however, under this exception, no such requirement is proposed since it is OREB's understanding that snap beans must be routinely irrigated at least every 5 days and the "unforeseen" criteria would not be feasible.

OREB also recommends that the following data be required if Section 18 registrations will continue to be considered, or if a Section 3 registration will be considered in the future for vinclozolin use on snap beans:

- Guideline 132-1(a)--Foliar dislodgeable residue study, and
- Guideline 133-3--Dermal passive dosimetry exposure study for snap bean irrigation workers.

If the PHI is reduced to less than the current 10 days, OREB also recommends that dermal passive dosimetry exposure studies for snap bean harvesters (both hand harvesters and workers involved in mechanical bean harvesting activities) be required.

Attachment: Memorandum, "ID#96MI0004 Section 18 Exemption for Use of Vinclozolin on Snap Beans in the State of Michigan," from Pilot Interdisciplinary Risk Assessment Team to Libby Pemberton, Registration Division, dated 4/23/96.

cc: J. Leahy, OREB (7509C)
A. Nielsen, OREB (7509C)
C. Lewis, PIRAT (7509C)
OREB Chemical File #113201
OREB Correspondence File